No. 9600064

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE , OR USING IT IN UCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY CTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'9481'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of Washington, D.C. this thirty-first day of March, in the year of our Lord two thousand.*

PLANT VARIETY PROTECTION OFFICE · DEPARTMENT OF AGRICULTURE · U.S.A.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Pioneer Hi-Bred International, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

3. VARIETY NAME
9481

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
700 Capital Square
400 Locust St.
Des Moines, IA 50309

5. TELEPHONE *(include area code)*
515/270-3582

6. FAX *(include area code)*
515/253-2288

FOR OFFICIAL USE ONLY

PVPO NUMBER
9600064

FILING DATE
NOV 22, 1995

FEES RECEIVED
FILING AND EXAMINATION FEE
$ 2450.00

DATE
NOV. 22, 1995

CERTIFICATION FEE
$ 300

DATE
OCT 18 96

7. GENUS AND SPECIES NAME
Glycine Max

8. FAMILY NAME *(Botanical)*
Leguminosae

9. CROP KIND NAME *(Common name)*
Soybean

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.) (Common name)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Iowa

12. DATE OF INCORPORATION
1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

John Grace
7300 NW 62nd Ave.
PO Box 1004
Johnston, IA 50131-1004

Mike Roth (copy)
700 Capital Square
400 Locust St.
Des Moines, IA 50309

14. TELEPHONE *(include area code)*
515/270-3582

15. FAX *(include area code)*
515/253-2288

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of the Variety
d. ☒ Exhibit D. Additional Description of the Variety
e. ☒ Exhibit E. Statement of the Basis of the Applicant's Ownership
f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository)*
g. ☒ Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)?*
☐ YES *(If "yes," answer items 18 and 19 below)* ☒ NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES *(If "yes," give names of countries and dates)* ☒ NO

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*		SIGNATURE OF APPLICANT *(Owner(s))*	
D. John Grace III			
NAME *(Please print or type)*		NAME *(Please print or type)*	
D. John Grace III			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Soybean Research Coordinator	11/16/95		

SD-470 (04-95) *(Previous editions are to be destroyed)*

(See reverse for instructions and information collection burden statement)

Exhibit A: Origin and Breeding History

Breeding History of 9481 Soybean

1990 (Summer)	Original cross made at Union City, TN. Cross number was PX 60157. Parentage = 4667-09/A47415. 4667-09 = 4280/Fayette. A4715 = A5474//Douglas/A3127.
1990-91 (Winter)	F1 plants grown in winter nursery at Ponce, Puerto Rico in rows 6137 and 6138. Plants were individually threshed. F2's derived from single plants were replanted at Puerto Rico in rows 6925 to 6928. These rows were harvested via modified single seed descent to produce the F3.
1991 (Summer)	F3 bulks planted in Advanced Populations nursery at Union City, TN in rows 44217-44230. That fall, 200 single F4 plants were pulled from these rows..
1991-92 (Winter)	199 short row increase plots for the plants from PX 60157 were grown in Puerto Rico winter nursery. This seed increase used to make jump from single plant to rod-row yield tests.
1992 (Summer)	PX60157-299 entered as entry 31 in the UNC420 prelim test which was grown as 3 replications at 2 locations.
1992-93 (Winter)	200 seeds of PX60157-299 and 11 other selections from this same cross were sent to Puerto Rico to produce single purification plants for that summer Breeder's seed.
1993 (Summer)	PX60157-299 entered as entry 36 in the A4L advanced test which was grown at 12 locations over a wide area. 90 individual Breeder's seed purification rows were harvested.
1993-94 (Winter)	PX60157-299 was recommended for advancement and named XB49C. 219 pounds of seed from the Breeder's seed purification rows was sent to Upala, Costa Rica for a bulk seed increase of 5 acres.
1994 (Summer)	XB49C was entered as entry 11 in the A4L advanced test which was grown at 16 locations over a wide area. 9481 has been shown to be uniform and stable for all plant traits from generation to generation with no evidence of variants. 101 acres of Parent Seed increase for XB49C was grown in Mt. Vernon, IN and produced 4267 bushels.
1995	9481 was named in 1995 due to its yield potential and resistance to cyst nematode races 3 and 14.

Exhibit B: Novelty Statement

9481 is most similar to CX469c, Delsoy 4710, Pyramid, S46-44, S48-84, TN4-86, and TN4-94. These varieties are similar in late maturity, indeterminate growth habit and Soybean Cyst nematode resistance. However, 9481 has white flowers while the others in the above grouping have purple flowers.

A4715 and Avery have white flowers like 9481, in addition to indeterminate growth habit and nematode resistance. Avery is 5 days later than 9481 and has brown pods. 9481 is 5 inches taller than A4715. (Table 1)

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
~~LIVESTOCK, MEAT, GRAIN~~ & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Pioneer Hi-Bred International, Inc.		9481

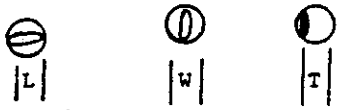
ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
700 Capital Square
400 Locust Street
Des Moines, IA 50309

FOR OFFICIAL USE ONLY
PVPO NUMBER
9600064

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[2]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[2] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][7] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[1] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[2] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

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11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17') 3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton') 3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[1] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton') 3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will') 3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[0][7] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V 9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION:** (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★ [2] Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★ [1] Bacterial Blight (*Pseudomonas glycinea*)

★ [2] Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★ [1] Brown Spot (*Septoria glycines*)

Frogeye Leaf Spot (*Cercospora sojina*)

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [ ] Other (*Specify*) _____

[0] Target Spot (*Corynespora cassiicola*)

[0] Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)

[0] Powdery Mildew (*Microsphaera diffusa*)

★ [0] Brown Stem Rot (*Cephalosporium gregatum*)

[0] Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [1] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[1] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

★ [1] Race 1 [1] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [0] Race 6 [0] Race 7

[0] Race 8 [0] Race 9 [ ] Other *(Specify)* _____

VIRAL DISEASES:

[1] Bud Blight (Tobacco Ringspot Virus)

[1] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [1] Cowpea Mosaic (Cowpea Chlorotic Virus)

[1] Pod Mottle (Bean Pod Mottle Virus)

★ [1] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [0] Race 1 [0] Race 2 [2] Race 3 [0] Race 4 [2] Other *(Specify)* Race 14

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [0] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[0] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [0] Iron Chlorosis on Calcareous Soil

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	A4715	Seed Coat Luster	A4715
Leaf Shape	9501	Seed Size	A4715
Leaf Color	A4715	Seed Shape	A4715
Leaf Size	9501	Seedling Pigmentation	A4715

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

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VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
9481 Submitted	128	1.9	111			41.3	23.2	17	3
A4715 Name of Similar Variety	128	1.7	101			41.2	22.6	16	3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.

2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.

3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.

4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Exhibit D: Additional Description of Variety

In Exhibit C we have identified 9481 as susceptible to bacterial blight, brown spot, pod and stem blight, rhizoctonia root rot, bud blight, yellow mosaic, cowpea mosaic, pod mottle and seed mottle. This does not mean that we consider 9481 to be worse than other varieties of similar maturity in reaction to these challenges. Rather, we have chosen to be conservative and have identified 9481 as "susceptible".

Variety 9481 is a late group IV variety. If group IV maturities are divided into tenths, the relative maturity of 9481 is 4.8.

Isozyme information for 9481:

ACO2	ACO3	ACO4	ACP	DIA	ENP	IDH1	IDH2	MDH	MPI	PGM1	PHI1
2	1	3	A	A	A	2	1	A	A	1	1

Exhibit E: Statement of the Basis of Applicants Ownership

Variety 9481 was originated and developed by plant breeders (U.S. nationals) from whom, by agreement, Pioneer Hi-Bred Int'l, Inc. has obtained exclusive rights to 9481. No rights to such invention, discovery or development are retained by the plant breeder or any other party.

Pioneer Hi-Bred Int'l Inc,
PVP Application 9481 Soybean

Table 1. T-test comparison of 9481 vs. A4715 for height in inches, 1993-94 2-year analysis. Height is defined as the distance (in cm) from the soil surface to the topmost pod. Plots were four 30 inch rows wide and approximately 15 feet long.

YEAR	LOC	REP	9481 (X1)	A4715 (X2)	X1-X2	$(X1-X2)^2$
			-- height in inches --			
1993	067A	1	47.3	37.3	10.0	100.00
	069A	1	42.0	35.7	6.3	39.69
	070D	1	44.3	42.0	2.3	5.29
	021A	1	39.0	31.2	7.8	60.84
	023B	1	33.5	29.0	4.5	20.25
	024A	1	38.0	35.0	3.0	9.00
	026L	1	41.5	39.0	2.5	6.25
1993		**SUM**	285.6	249.2	36.4	241.32
		MEAN	40.80	35.60	5.20	**=d**
		n =	7	groups of individuals		
1994	067A	1	42.0	40.0	2.0	4.00
	069A	1	40.7	39.3	1.4	1.96
	070A	1	40.3	38.3	2.0	4.00
	021B	1	42.0	40.0	2.0	4.00
	026I	1	52.5	50.0	2.5	6.25
	027B	1	54.5	48.0	6.5	42.25
	518K	1	52.0	43.0	9.0	81.00
	067A	2	44.0	37.0	7.0	49.00
	021B	2	39.5	38.0	1.5	2.25
	067A	3	44.0	37.0	7.0	49.00
	073A	1	50.0	45.0	5.0	25.00
	021B	3	37.0	32.5	4.5	20.25
	029C	1	39.5	32.5	7.0	49.00
	067A	4	45.5	38.0	7.5	56.25
	040G	1	51.0	45.0	6.0	36.00
	020C	1	44.0	39.0	5.0	25.00
	026I	2	53.0	49.5	3.5	12.25
	029C	2	35.0	30.0	5.0	25.00
	518K	2	53.0	40.0	13.0	169.00
	527K	1	59.0	48.0	11.0	121.00
	067A	5	42.3	37.3	5.0	25.00
	073A	2	45.7	44.0	1.7	2.89
1994		**SUM**	1006.5	891.4	115.1	810.35
		MEAN	45.75	40.52	5.23	**= d**
		n =	22	groups of individuals		

1993 ANALYSIS

Ave 9481 =	40.80	inches
Ave A4715 =	35.60	inches
d = (Ave X1 - Ave X2)	5.20	
SE diff = SQRT of	1.239	
SE diff =	1.113	
t = d/SE diff =	4.672	
df =	6	
Prob > **t** =	0.0034	significant at <1% level

1994 ANALYSIS

Ave 9481 =	45.75	inches
Ave A4715 =	40.52	inches
d = (Ave X1 - Ave X2)	5.23	
SE diff = SQRT of	0.45058	
SE diff =	0.6713	
t = d/SE diff =	7.794	
df =	21	
Prob > **t** =	0.0000	significant at <1% level

Formula for Standard Error Calculations:

$$\text{SE diff} = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

1993 Standard Error Calculation:

$$\text{SE diff}_{93} = \sqrt{\frac{241.32 - ((36.4)^2/7)}{(7)(6)}}$$

1994 Standard Error Calculation:

$$\text{SE diff}_{93} = \sqrt{\frac{810.35 - ((115.1)^2/22)}{(22)(21)}}$$

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TOTAL		SUM	1292.1	1140.6	151.5	1051.67	COMBINED 1993-94 ANALYSIS			
		MEAN	44.56	39.33	5.22		Ave 9481 =	44.56	inches	
		n =	29	groups of individuals			Ave A4715 =	39.33	inches	
							d = (Ave X1 - Ave X2)	5.22		
							SE diff = SQRT of	0.32046		
							SE diff =	0.566		
							t = d/SE diff =	9.228		
							df =	28		
							Prob > t =	0.0000	significant at <1% level	

Combined Standard Error Calculation:

$$SE\ diff_{comb} = \sqrt{\frac{1051.67 - ((151.5)^2/29)}{(29)\ (28)}}$$